



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,033	07/11/2003	Taku Amada	240200US2	2698
22850	7590	06/10/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			PHAM, HAI CHI	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 06/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/617,033	Applicant(s) AMADA ET AL.	
	Examiner Hai C. Pham	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2005.
 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18, 26, 28 and 31-36 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☒ Claim(s) 31-35 is/are allowed.
 6) ☒ Claim(s) 1, 3, 7-14, 16-18, 26, 28 and 36 is/are rejected.
 7) ☒ Claim(s) 2, 4-6 and 15 is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive regarding the lack of motivation with respect to the combination with Nakajima et al. and, therefore, the finality of that action is withdrawn and the proposed Amendment to the claims has been entered.
2. The indicated allowability of claims 26 and 28 is withdrawn in view of the newly discovered reference to Hasegawa et al. (U.S. 5,596,430). Rejections based on the newly cited reference follow.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 03/16/05 is being considered by the examiner. The information disclosure statement has been placed in the application file.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2861

5. Claims 1, 3, 7-11, 13-14, 16-18 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews (U.S. 5,363,128) in view of Nakajima et al. (U.S. 5,753,907).

Andrews discloses a light scanning apparatus configured to scan a scanned surface (surface of the photoconductive belt 2) with a light beam, comprising a liquid crystal element (optical element 50 having liquid crystal material) configured to deflect the scan line in the sub-scanning direction and thus adjusting the light beam spot position formed on the scanned face, said liquid crystal element being provided between a light source (12) and a polygon mirror (10) (Fig. 1)

Andrews fails to teach the light intensity compensating unit, which includes a detecting unit for detecting the intensity of the light beam and for detecting the scan start timing of the light beam, the light beam shaping aperture, the control of the transmissivity of the adjusting unit.

Nakajima et al. discloses a multiple beam scanning apparatus comprising an adjusting unit that adjusts the scanning line pitch and thus the position of a light spot of said light beam formed on the scanned face, and a compensating unit that compensates the light intensity of said light beam at said scanned face due to change caused by the adjustment of the position of said light spot (Fig. 6c shows the intensity of the light rays is changed due to the installment angle Θ , through which the position of the light spots is changed) (col. 3, lines 16-40: the light intensity is compensated while the scanning line pitch is adjusted), a detecting unit (photosensor 34) that detects the intensity of said light beam, wherein said compensating unit controls the radiation

Art Unit: 2861

intensity of said light source (col. 3, lines 16-40), an aperture (27), provided between said light source and said scanning unit (Fig. 1a), that shapes said light beam, wherein said compensating unit displaces said aperture (by rotating the aperture 27), said compensating unit controls a transmissivity adjusting unit provided between said light source and said scanning unit (the aperture 27 adjusts the intensity of the light beam by rotation and thus blocks part of the light beam).

Since both Andrews and Nakajima et al. are in the same field of endeavor, the teachings in providing a light intensity compensation unit by Nakajima et al. while recognizing that the change of the light spot position on the scanned surface would change the light intensity, would have been recognized in the pertinent art of Paoli et al. therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the light intensity compensation unit in the device of Andrews as taught by Nakajima et al. The motivation for doing so would have been to maintain constant exposure intensity when the light beam spot position on the scanned surface is adjusted as suggested by Nakajima et al. at col. 2, lines 4-6.

Andrews further discloses the optical element (50) formed by liquid crystal being disposed either between the light source and the polygon mirror (10) or between the polygon mirror and the photoconductor belt (2) for correcting a curvature or line skew of the scanning lines by applying a variable voltage across the optical component, which can be applied to a either single or multiple ROS stations (tandem-type image forming apparatus) for producing a color image.

Art Unit: 2861

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews in view of Nakajima et al., as applied to claim 1 above, and further in view of Hayashi et al. (U.S. 6,081,386).

Andrews as modified by Nakajima et al., discloses all the basic limitations of the claimed invention except for the resin lens provided in the optical path from said light source to said scanned face.

Hayashi et al. teaches using a non-spherical scanning lens made of plastic, which would prevent the non-uniformity in the refraction index of the scanning lens to cause the variation of the scanning line pitch.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a scanning lens made of resin as taught by Hayashi et al. in the device of Andrews. The motivation for doing so would have been to suppress eventual variation of the scanning line pitch due to the non-uniformity of the refraction index of the scanning lens as suggested by Hayashi et al.

7. Claims 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews in view of Hasegawa et al. (U.S. 5,596,430).

Andrews discloses all the basic limitations of the claimed invention including a plurality of light beams scanning the surface of the photoconductive belt (Fig. 1), each having a corresponding adjusting unit (50) but is silent on the maximum deflecting angle of the liquid crystal element.

Hasegawa et al. discloses a light beam deflector for use in a printing system (e.g., laser printer), the deflector having a liquid crystal element against which is applied a proper voltage for deflecting an incident light beam, wherein the maximum deflecting angle of the liquid crystal element is defined by the cell thickness and the variation of the refraction index of the liquid crystal, and wherein such deflecting angle can be set at 95 millidegrees or 1.6 milliradians or 5.5. minutes when the cell thickness is set at 50 microns and the variation of the refraction index is 1.0 (col. 7, lines 9-35).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the liquid crystal element having a controlled angle of deflection in the device of Andrews as taught by Hasegawa et al. The motivation for doing so would have been to provide a high efficiency of usage of the deflected light whose wave surface is not disturbed. Moreover, it would have been obvious to one having ordinary skill in the art at the time the invention was made to set the deflecting angle within the claimed range of 4 minute or less, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Allowable Subject Matter

8. Claims 31-35 are allowed.

9. Claims 2, 4-6 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

10. Applicant's arguments with respect to claims 1, 3, 7-14, 16-18, 26, 28 and 36 have been considered but are moot in view of the new grounds of rejection presented in this Office action.

Response to Arguments

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (571) 272-1934. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2861

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM
PRIMARY EXAMINER

June 9, 2005